



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 00ATEX2076X** Issue: **6**

4 Equipment: **A range of Rotary and Linear Inductive Position Sensors Incorporating the EX01, EX02 and EX04 Electronics Systems**

5 Applicant: **Positek Limited**

6 Address: L6 The Link, Andoversford Industrial Estate  
Andoversford, Cheltenham, Gloucestershire GL54 4LB, UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 +A1, +A2	EN 50020:1994	EN 50303:2000
IEC 61241-0:2004	IEC 61241-11:2005	

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

**Group II Gas**

(Applicable to EX01, EX02 and EX04 and designated using an 'X' in the Part No.)



II 1 GD  
EEx ia IIC T4 (T<sub>a</sub> = -40°C to 80°C)

**Group II Gas/Dust**

(Applicable to EX02 and EX04 and designated using an 'E' in the Part No.)



II 1 GD  
EEx ia IIC T4 (T<sub>a</sub> = -40°C to 80°C)  
Ex iaD 20 T135°C (T<sub>a</sub> = -40°C to 80°C)

**Combined Group I and Group II Gas/Dust**

(Applicable to EX02 and EX04 and designated using an 'M' in the Part No.)



I/II M1/1GD  
EEx ia I/IIC T4 (T<sub>a</sub> = -40°C to 80°C)  
Ex iaD 20 T135°C (T<sub>a</sub> = -40°C to 80°C)

Project Number 20035  
C. Index 13

C Ellaby  
Certification Officer

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**Sira Certification Service**

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**SCHEDULE**

**EC TYPE-EXAMINATION CERTIFICATE**

**Sira 00ATEX2076X  
Issue 6**

**13 DESCRIPTION OF EQUIPMENT**

The apparatus comprises of a range of Rotary and Linear inductive position sensors. Each sensor incorporates the Positek EX01 Electronics System, which is used to excite the coils. The coils are either configured on a printed wiring board (for the rotary sensor) or wound onto a former (for the linear sensor). The apparatus is housed within a metal enclosure that provides a degree of protection of at least IP20.

The apparatus is to be powered via a suitably certified galvanic isolator and may have up to 100 metres of cable connected. The parameters associated with the sensors are:

U<sub>i</sub> = 11.4 V  
I<sub>i</sub> = 0.58 A  
P<sub>i</sub> = 0.51 W

**Variation 1** This variation introduced the following changes:

- i. The incorporation of a new electronics package that has been given the designation EX02 electronics system; the new circuit contains less capacitance but more inductance than the original circuit, consequently, the EX02 version has different safety parameters and cable criteria, as detailed below and amended condition of certification (clause 17.3):

EX01 Electronics System	EX02 Electronics System
U <sub>i</sub> = 11.4 V	U <sub>i</sub> = 11.4 V
I <sub>i</sub> = 0.58 A	I <sub>i</sub> = 0.46 A
P <sub>i</sub> = 0.51 W	P <sub>i</sub> = 0.51 W

- ii. The addition of a new condition of certification (clause 17.2).

**Variation 2** This variation introduced the following changes:

- i. Alternative options for trimmer potentiometers R23 and R24.

**Variation 3** This variation introduced the following changes:

- i. Revisions to drawings that do not affect certification

**Variation 4** This variation introduced the following changes:

- i. The introduction of EX02 electronic package with metal enclosure types, to drawing M000-02, these are used in the presence of combustible dust and in Group I Category M1 environments.



**SCHEDULE**

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**Variation 5** This variation introduced the following changes:

- i. The introduction of the Positek EX04 Electronics System, this is a modified version of the EX02 incorporating the following changes.
  - The reduction of a number of the electronic component package sizes and the introduction of a new, alternative potentiometer.
  - The maximum cable length was increased from 150 to 1000 metres and the associated condition of certification was amended to reflect this.
  - Entity parameter Ii was changed.
- ii. For clarity, Ci and Li was introduced for the Positek EX01, EX02 and EX04 electronics systems, the entity parameters for all models are listed below, although some of the values are essentially the same as those previously specified, these parameters now take precedence.

Parameter	EX01	EX02	EX04
Ui	11.4 V	11.4 V	11.4 V
Ii	0.58 A	0.46 A	0.2 A
Pi	0.51 W	0.51 W	0.51 W
Ci without integral cable	1.64 µF	1.16 µF	1.16 µF
Ci with integral cable (Max. length)	1.66 µF (100 m)	1.19 µF (150 m)	1.36 µF(1000 m)
Li without integral cable	23 µH	50 µH	50 µH
Li with integral cable (Max. length)	89µH (100 m)	149 µH (150 m)	710 µH (1000 m)

14 **DESCRIPTIVE DOCUMENTS**

14.1 **Drawings**

Refer to Certificate Annexe.

14.2 **Associated Sira Reports and Certificate History**

Issue	Date	Report no.	Comment
0	29 June 2000	R52A6623A	The release of prime certificate.
1	18 February 2004	R52A11406A	The introduction of Variation 1.
2	03 December 2004	R52A12036A	The introduction of Variation 2.
3	22 May 2006	R52A14266A	The introduction of Variation 3.
4	15 August 2006	R52A14226B R52A14226C	The introduction of Variation 4 (Re-issued 4 September 2007 to allow report R52A14226C to replace R52A14226B).
5	26 June 2007	N/A	All previously issued certification was rationalised into a single certificate, Issue 5, Issues 0 to 4 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.
6	17 December 2009	R20035A	This Issue covers the following changes: <ul style="list-style-type: none"> <li>• The introduction of Variation 5.</li> <li>• The marking in section 12 was clarified.</li> <li>• The re-issue of Variation 4 was recognised.</li> <li>• The special conditions for safe use were simplified.</li> </ul>

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15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

- 15.1 The Rotary and Linear Inductive Position Sensors have not been subjected to a voltage test in accordance with EN 50020:1994 clause 10.6, the user/installer shall therefore take this into account, e.g. the Sensors shall be used in conjunction with a suitably certified galvanic isolator, the output parameters of which shall not exceed the quoted input parameters contained within the apparatus description.
- 15.2 When using a Sensor that has an integral cable in a dust application, the free end of the cable shall be appropriately terminated.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 When the Rotary and Linear Inductive Position Sensors are supplied with cable, then the following cable characteristics shall not be exceeded:

EX01 Electronics System	EX02 Electronics System	EX04 Electronics System
Capacitance ≤200 pF/m	Capacitance ≤0.55µF	Capacitance ≤200 pF/m
Inductance ≤0.66 µH/m	Inductance ≤0.66 µH/m	Inductance ≤0.66 µH/m
Length ≤100 m	Length ≤150 metres	Length ≤1000 m

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# Certificate Annexe

**Certificate Number:** Sira 00ATEX2076X  
**Equipment:** EX01, EX02 and EX04 Electronics System  
**Applicant:** Positek Ltd



## Issue 0

Number	Sheet	Rev.	Date	Description
EX01-59B.SCH	1 of 1	B	04 May 00	Circuit diagram for EX01 Electronics Interface
EX01-20C.XLS	1 of 1	C	-	System parts list for intrinsically safe products
LB01-10	1 of 1	D	02 Jun 00	Product label for intrinsically safe sensors

## Issue 1

Number	Sheet	Rev.	Date	Description
EX02-59A.SCH	1 of 1	A	18 Dec 03	Circuit diagram for EX02 electronics interface
EX02-20A	1 to 2	-	12 Feb 02*	System Parts List for Intrinsically Safe Products
LB01-10	1 of 1	E	08 Feb 04	Product label for intrinsically safe sensors

\* This is the date that the drawing was stamped by Sira.

## Issue 2

Number	Sheet	Rev.	Date	Description
EX02-20c	1 and 2	-	16 Nov 04*	Parts list

\* This is the date that the drawing was stamped by Sira.

## Issue 3

Number	Sheet	Rev.	Date	Description
EX02-59	1 of 1	B	24 Apr 06	Circuit Diagram for EB29 Sensor Board Plus External Feed Through Caps
EX02-20e	1 & 2	E	24 Apr 06	System Parts List for Intrinsically Safe Products

## Issue 4

Number	Sheet	Rev.	Date	Description
EX02-20f	1 & 2	F	19 Jul 06	System Parts List for Intrinsically Safe Products
M000-02	1 to 6	C	19 Jul 06	Typical Construction Details For M Series Sensors
LB05-10	1 of 1	A	02 Aug 06	Product Label For Intrinsically Safe Dust/Mining

**Issue 5** (No new drawings were introduced.)

## Issue 6

Number	Sheet	Rev.	Date	Description
EX04-20b	1 to 2	A	24 Nov 09	System Parts List for Intrinsically Safe Products
M000-02	1 to 7	D	24 Nov 09	Typical Construction Details For M Series Sensors
LB13-10	1 of 1	A	24 Nov 09	Product Label for Intrinsically Safe Sensors

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